NA1570-01

LAKE MANAGEMENT PLAN

Region	Area	D.O.W. Number	County	D.O.W. Lake Name	Acreage
4	417	24-0044-00	Freeborn	Freeborn Lake	S.A. 2,126 L.A. 2,126

Long Range Goal:
To provide a recreational fishery between winterkill events and to provide a spawning and nursery area for various fish species with potential for downstream population impacts in the Cobb River. Develop a shallow lake management plan in cooperation with Section of Wildlife to better control rough fish and improve lake water quality. Fish management in Freeborn Lake will be considered a complimentary management tool with the purpose of prolonging the positive effects of winterkill and/or reclamation events in maintaining a clear-water-state. Game fish stocking, rapid fish growth, and relatively quick return of stocked fish to anglers will provide recreational opportunity during appropriate conditions between winterkill and/or reclamation events. Therefore, the primary goal is to create, maintain, and monitor conditions for improved habitat and water quality for fish and wildlife in cooperation with the DNR Section of Wildlife. Secondarily, the goal is to provide a boom and bust northern pike and yellow perch fishery with an opportunity for bluegill, which have demonstrated the ability to suppress common carp reproduction and further support improved water clarity. This complimentary management approach could also provide a source for northern pike brood fish for hatchery production purposes. Therefore, when the northern pike population is deemed sufficient in regard to numbers and sizes the lake could be netted during a short time in Spring using ice-out trap netting to collect adult northern pike.

Operational Plan:
-Stock adult northern pike at a rate of 0.5 lb/LA (1,063 lbs) following reclamation or winterkill events.
-Stock pre-spawn yellow perch adults at a rate of 0.5 – 1.0 lb/LA (1,063 – 2,126 lbs) following reclamations or winterkill events.
-Stock adult bluegill at a rate of 0.5 – 1.0 lb/LA (1,063 – 2,126 lbs) following reclamations or winterkill events.
-Stock northern pike, yellow perch, and/or bluegill at appropriate life stages following reclamations or winterkill events, or as needed and/or available (e.g., surplus).
-Work with the Invasive Species Specialist on an education program to present to the local lake associations and sportsman's clubs in regard to preventing the spread of Eurasian watermilfoil. In addition, increase education efforts on the importance of aquatic macrophytes and shoreline stewardship to fish and in-lake fish habitat.
-Re-survey 2019. Re-plan 2020.

Midrange Objective:
-Assess potential sites for upper watershed northern pike stocking.
-Cooperate with the Section of Wildlife, Freeborn County, Ducks Unlimited, and other local interests to develop infrastructure (e.g., outlet structure and fish barrier) in order to implement shallow lakes management with the goal to improve and preserve water quality.
-Cooperate with local government, local organizations and agencies in the development of watershed and lakeshore management plans to identify areas needing protection or restoration.
-Participate in lake advisory committee meetings and other forms of public engagement.
-Conduct point intercept, score-your-shore, and emergent/floating aquatic vegetation surveys during mid- to late-June to simultaneously assess the distribution of curlyleaf pondweed, the diversity and distribution of native aquatic vegetation, and estimate an Aquatic Plant based Index of Biotic Integrity (IBI). Coordinate vegetation survey efforts with the Invasive Species Program.

Potential Plan:

Replace the outlet control structure and incorporate a fish barrier.	$100,000
Lake Reclamation in Partnership with Section of Wildlife	$100,000
TOTAL $	$200,000

NARRATIVE: (Historical perspectives - various surveys; past management; social considerations; present limiting factors; survey needs; land acquisition; habitat development and protection; commercial fishery; stocking plans; other management tools; and evaluation plans)

(see reverse side)

FOR CENTRAL OFFICE USE ONLY

Entry Date:	**Year Resurvey:**
Stock Species -Size- Number per Acre	
Schedule:	**Year Beginning**
Population Manipulation ___YES ___NO Year	
Development ___YES ___NO Year	
Creel or Use Survey ___YES ___NO Year	
Other: Year	

Primary Species Management: NOP, YEP	**Secondary Species Management:** BLG
Area Supervisor's Signature: Craig Soupir	Date: Digitally signed by Craig Soupir DN: cn=Craig Soupir, o=Waterville Area Fisheries, ou=MnDNR, email=craig.souplr@state.mn.us, c=US Date: 2015.05.13 10:41:59 -05'00'
Regional Manager's Signature: Jack Lauer by BS	Date: Digitally signed by Jack Lauer by BS DN: cn=Jack Lauer by BS, o=MNDNR, ou=Section of Fisheries, email=brian.schultz@state.mn.us, c=US Date: 2015.05.14 14:07:17 -05'00'

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Region	Area	D.O.W. Number	County	D.O.W. Lake Name	Acreage	Date
4	417	24-0044-00	Freeborn	Freeborn Lake	S.A. 2,126 L.A. 2,126	March 21, 2015

NARRATIVE:

VARIOUS SURVEYS:

Survey History: Game Lake surveys were conducted in 1947, 1956 and 1958. Lake morphometry was determined in 1967. Fisheries lake surveys and/or fish population assessments were completed in 1983, 1984, 2004, and 2014.

2014 Survey:

Freeborn Lake is a 2,126 acre lake located in Freeborn County south of the town of Freeborn. A public access is located off 665th Avenue at Arrowhead Point County Park. Freeborn Lake is a large, very shallow lake with a maximum depth of 6.7 feet and an average depth of only 2.3 feet. The fish population is managed primarily for yellow perch and secondarily for northern pike. However, winterkills occur frequently and game fish populations are often at low abundances. A partial winterkill occurred in the winter of 2014, which greatly depleted the fish community. A contingency stocking plan calling for 200 pounds of adult yellow perch and 200 adult northern pike takes place after winterkill events. Freeborn Lake was surveyed the week of June 23, 2014 as part of a regular monitoring program conducted by Minnesota DNR. This survey was intended to assess the fish community by deploying nine gill nets and fifteen trap nets, as well as recording water quality parameters. Since this was a Re-survey, outlet observations (e.g. flow velocity, average depth, and barrier descriptions) and watershed/shoreline characteristics were also recorded.

Black Bullhead: Black bullhead was the most abundant fish species in the 2014 survey. Gill nets yielded 13.3 fish/net, which ranks in the second quartile for Lake Class 41 (4.6 – 23.4 fish/gill net). Trap nets collected 21.3 fish/net, which ranks in the third quartile for Lake Class 41 (14.7 – 78.1 fish/trap net). These catch rates are just a fraction of the rates observed in a 2004 survey (163.8 fish/gill net; 245.8 fish/trap net), which is likely the result of a winterkill during the harsh winter of 2014. Black bullhead lengths from both gear types ranged from 4.3 to 10.5 inches and averaged 7.1 inches. The Proportional Size Distribution of quality length fish (PSD; ≥ 9.0 inches) for black bullhead collected in both gear types was 1, indicating that the population is comprised of many small individuals. Black bullhead, especially young fish, are able to survive in low oxygen environments and are often all that remains in the lake after a winterkill occurrence. Northern pike were not stocked in 2014 following the winterkill event, so they should be considered to be stocked in 2015 to remain on top of the black bullhead population.

Yellow Perch: Yellow perch were collected in gill nets at a rate of 8.1 fish/net, which ranks in the second quartile for Lake Class 41 (3.0 – 8.9 fish/gill net). This catch rate is significantly lower than the survey conducted in 2004 (76.8 fish/gill net), which is likely due to a winterkill in 2014. The lengths of yellow perch in gill nets ranged from 4.6 to 6.3 inches and averaged 5.6 inches (PSD [≥ 8.0 inches] = 0), indicating that the remnant population after the 2014 winterkill was comprised of small individuals. Considering the relatively low abundance of fish in Freeborn Lake after the winterkill, yellow perch have more food resources available and have the potential to grow fast if they do not succumb to winterkill again in the following years. Adult yellow perch (N = 3,675) were stocked in 2014 after the winterkill event at a rate of 21 fish per pound.

Other Species: Other fish species collected in low abundance were walleye (N = 1), green sunfish (N = 3), bluegill (N = 1), common carp (N = 21), and white sucker (N = 1).

Water Quality Parameters: Water quality parameter measurements included secchi depth, water temperature, and dissolved oxygen readings. At the time of this survey, secchi depth was 0.5 feet. Freeborn Lake has shallow, windswept water with very low clarity. Water temperatures and dissolved oxygen readings throughout the water column ranged from 25.2 degrees Celsius and 11.8 ppm at the surface to 23.8 degrees Celsius and 10.7 ppm at 4.0 feet.

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NARRATIVE continued:

PAST MANAGEMENT:
Crappies, yellow perch, sunfish, bullheads and northern pike were stocked from time to time between 1916 and 1969. No stocking has occurred since 1969, when 1,800 crappies and 175 pumpkinseed sunfish were planted. Carp and bigmouth buffalo have been removed occasionally since 1928. Winter oxygen concentration has been monitored extensively over the years given the lakes susceptibility to winterkill. The lake has been opened for liberalized fishing numerous times over the years, although less often during recent years as winterkill has been less common and/or more difficult to predict.

SOCIAL CONSIDERATIONS:
Freeborn Lake is of local interest. In 2014, the DNR was approached by Freeborn County to assess the feasibility of a lake reclamation. Ongoing meetings will be taking place on the short term in regard to improving lake management with the goal of achieving more improved water quality, which may require some infrastructure improvements (e.g., outlet structure and fish barrier) in order to successfully implement shallow lake management. Developing local support will be necessary and has not been successful in the past.

PRESENT LIMITING FACTORS
Frequent winterkill prevents a higher-value fish community from developing in Freeborn Lake, except for temporary "boom-and-bust" situations following winterkill. There is no effective barrier to upstream movement of fish; carp can enter the lake from the Cobb River and establish large populations following winterkill events. Freeborn Lake may serve as a spawning and nursery area for common carp, which could have negative impacts on the entire watershed.

HABITAT DEVELOPMENT AND PROTECTION:
Opportunities probably exist to reduce nutrient and sediment loading and to stabilize hydrology in the Freeborn Lake watershed. Wetland restoration, riparian buffer and other beneficial projects can be considered in cooperation with the Freeborn County Farm Service Agency. Fish habitat values, such as northern pike nursery habitat, can potentially be incorporated into such projects.

COMMERCIAL FISHERY:
Freeborn Lake is not in an Inland Commercial Fishing Area; however, typically Jim Mertins obtains a B-permit that covers Freeborn Lake annually.

STOCKING PLANS:
-Stock adult northern pike at a rate of 0.5 lb/LA (1,063 lbs) following reclamation or winterkill events.
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OTHER MANAGEMENT TOOLS:
-Freeborn was considered at one time for use as a walleye rearing pond, but the infrequency of severe winterkill and the lack of a barrier to fish immigration essentially preclude this use.

NA-01570-01

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NARRATIVE continued:

EVALUATION:

-Assess potential sites for upper watershed northern pike stocking.

-Cooperate with the Section of Wildlife, Freeborn County, Ducks Unlimited, and other local interests to develop infrastructure (e.g., outlet structure and fish barrier) in order to implement shallow lakes management with the goal to improve and preserve water quality.

-Cooperate with local government, local organizations and agencies in the development of watershed and lakeshore management plans to identify areas needing protection or restoration.

-Participate in lake advisory committee meetings and other forms of public engagement.

-Conduct point intercept, score-your-shore, and emergent/floating aquatic vegetation surveys during mid- to late-June to simultaneously assess the distribution of curlyleaf pondweed, the diversity and distribution of native aquatic vegetation, and estimate an Aquatic Plant based Index of Biotic Integrity (IBI). Coordinate vegetation survey efforts with the Invasive Species Program.

-Re-survey 2019. Re-plan 2020.

-Prepared by: Craig Soupir, Area Fisheries Supervisor.

Add additional pages if needed